

Topic Report Series, No. 14

Puerto Rico

Quality assurance procedures were applied throughout the creation of this report.

This topic report integrates findings and provides context and background for interpretation of results from Census 2000 evaluations, tests, and other research undertaken by the U.S. Census Bureau. It is part of a broad program, the Census 2000 Testing, Experimentation, and Evaluation program, designed to assess Census 2000 and to inform 2010 Census planning.

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The Census 2000 Testing, Experimentation, and Evaluations Program provides measures of effectiveness for the Census 2000 design, operations, systems, and processes and provides information on the value of new or different methodologies. The results and recommendations from these analyses provide valuable information crucial to planning the 2010 Census. By providing measures of how well the Census 2000 was conducted, this program fully supports the Census Bureau's strategy to integrate the 2010 early planning process with ongoing Master Address File/TIGER enhancements and the American Community Survey. The purpose of the report that follows is to synthesize results from Census 2000 evaluations, experiments, and other assessments to make recommendations for planning the 2010 Census in Puerto Rico. Census 2000 Testing, Experimentation, and Evaluation reports are available on the Census Bureau's Internet site at: <http://www.census.gov/pred/www/>.

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Puerto Rico

1. Introduction

The Puerto Rico Topic Report looked at 15 evaluations. Four Puerto Rico specific evaluations were conducted: two involved focus groups, one an analysis of census data files, and one an operational analysis. Nonresponse and reactions to the Hispanic origin and race questions were evaluated using focus groups. Frequency and cross-tabulation files tables for both Puerto Rico and the U.S. were prepared from the census data files on Hispanic origin and race. Puerto Rico enumeration was the topic for the operational analysis.

While not specifically Puerto Rico evaluations, evaluations in the Address List Development category provide a considerable amount of data on Puerto Rico. These evaluations covered the following operations: address listing, Local Update of Census Addresses 99 (LUCA 99), and update/leave.

Many evaluations included in this topic report include Puerto Rico in the stateside analysis and provide few, if any, breakouts of Puerto Rico data. A number of evaluations that could have provided information on operations that took place in Puerto Rico, did not provide any analysis for Puerto Rico. Examples include evaluations which looked at the success of the advertising and promotion programs, enumeration of special places and coverage issues.

2. Background

Census 2000 in Puerto Rico was marked with two historic “firsts:” the use of the same questionnaire content as stateside and the requirement that respondents mail back their questionnaires. Both of these significant events, one requested by the Government of Puerto Rico during the content determination process and the other a Census Bureau methodological decision, affected the results of many of the evaluations included in the Puerto Rico Topic Report.

2.1 *Historical*

Spain ceded the island of Puerto Rico to the United States in 1898. Prior to then, Spain had taken censuses at irregular intervals between 1765 and 1887. The U.S. War Department took a special census of Puerto Rico in 1899. Puerto Rico, which became a commonwealth in 1952, has been included in every U.S. decennial census since 1910. Beginning in 1960, the census of population and housing was conducted as a joint project of the U.S. Census Bureau and the Government of Puerto Rico. The Puerto Rico Planning Board (PRPB) has been identified by the Office of the Governor as the liaison agency for census activities on the island. The Census Bureau was responsible for the data collection, and the PRPB provided input on content and data needs.

This partnership between the government of Puerto Rico and the Census Bureau is the result of an October 1958 special agreement concerning the censuses in Puerto Rico. The basic purposes of the agreement were to assure the efficient operation of the census program, to provide the Commonwealth with a large share of the responsibility for planning the census, and to assure full consideration of its unique statistical needs.¹ Each census thereafter conformed to the basic 1958 agreement with subsequent amendments, including Census 2000. Governors of Puerto Rico regularly have directed the PRPB to serve as the coordinating agency for the census operations.

2.2 *Questionnaire Content*

From 1960 - 1990, the Census Bureau worked with the PRPB to develop questionnaire content that met Puerto Rico’s unique needs. For example, in 1990 the Puerto Rico questionnaire had unique topics such as parents’ place of birth, vocational training, and condition of housing unit; but did not include stateside topics such as race, Hispanic origin, and home heating fuel.

During the questionnaire content development phase for Census 2000, however, the Government of Puerto Rico informed the Census Bureau in a letter to Dr. Martha Farnsworth Riche, Census Bureau Director, from Norma Burgos, PRPB Chairwoman, dated October 31, 1997, that Puerto Rico was requesting the same decennial questionnaire content as stateside. The reasons given for

¹U.S. Census Bureau, 1990 Census of Population and Housing, History, Part D, Chapter 13, *Puerto Rico, Virgin Islands, and the Pacific Island Territories*, March 1996.

the same content request included quicker processing and release of Puerto Rico census data and the inclusion of Puerto Rico in stateside summary statistics as well as comparability with stateside data.

2.3 *Data Collection*

Prior to Census 2000, Puerto Rico had always been enumerated using the list/enumerate (L/E) methodology. With L/E data collection, enumerators visit each housing unit to complete a census questionnaire, record addresses and update the L/E maps.

For Census 2000, a decision was made by the Census Bureau to use the update/leave (U/L) methodology for the entire Island.² In order to conduct an U/L operation, the Census Bureau first had to conduct an islandwide address listing (AL) operation. The AL operation was conducted in Puerto Rico from October, 1998 through January, 1999.

During U/L, enumerators canvass assignment areas to deliver a census questionnaire to each housing unit, update the address listing pages and Census Bureau maps. The household then completes and returns the questionnaire by mail. The move to an U/L strategy responded to changes taking place on the Island, including an increase in limited access communities and a population that mirrored the United States in the prevalence of two income families. These two trends indicated that it would be more difficult to implement a L/E methodology in 2000. The U/L methodology also offered other benefits, available stateside for many decennial censuses: self-response resulting in higher data quality and the development of an address list that could be used in future decennial operations.

²Thompson, John H., 2000 Decennial Census, Decision Memorandum No. 6, *Recommendation that the Census Bureau Use the Update/Leave Methodology for Data Collection During the Year 2000 Census of Puerto Rico*, signed by Robert W. Marx on August 12, 1996.

3. Scope

The purpose of this report is to summarize the findings and recommendations from the evaluation studies for those operations which took place in Puerto Rico. Not all evaluations provide information or data specific to Puerto Rico. Sometimes Puerto Rico data are included within the stateside analysis of an operation. The following is a list of the evaluations which provided Puerto Rico specific data:

Response Rates and Behavior Analysis

- A.2.b. Internet Data Collection
- A.3 Be Counted Campaign for Census 2000
- A.8 Puerto Rico Focus Groups on Why Households Did Not Mail Back the Census 2000 Questionnaire

Content/Data Quality

- B.1.b Analysis of Item Nonresponse Rates for the 100 Percent Housing and Population Items from Census 2000
- B.12 Puerto Rico Census 2000 Responses to the Race & Ethnicity Questions
- B.13 Puerto Rico Focus Groups on the Census 2000 Race and Ethnicity Questions

Special Places and Group Quarters

- E.5 Group Quarters Enumeration

Address List Development

- F.2 The Address Listing Operation and Its Impact on the Master Address File
- F.6 Evaluation of the Local Update of Census Addresses 99 (LUCA 99)
- F.10 Evaluation of the Update/Leave Operation

Field Operations

- H.2 Assessment of Field Verification
- H.5 Nonresponse Followup for Census 2000
- H.8 Operational Analysis of Enumeration of Puerto Rico
- H.9 Local Census Office Profile for Census 2000
- H.10 Date of Reference for Age and Birth Date used by Respondents of Census 2000

4. Results of Analysis

4.1 Address List Development Activities

The research question posed was: *How successful were the address list development activities?* There are three relevant evaluations in this category: F.2 The Address Listing Operation and Its Impact on the Master Address File, F.6 Evaluation of the Local Update of Census Addresses 99 (LUCA 99), and F.10 Evaluation of the Update/Leave Operation. All of these evaluations provide a significant amount of data that are Puerto Rico specific.

In 1990, all of Puerto Rico was enumerated using the list/enumerate methodology. A decision was made to enumerate all of Puerto Rico using the update/leave methodology in Census 2000 - basically a rural procedure in the U.S. While it represented a step forward, it was difficult to use a rural listing procedure, which included map spotting, in urban areas.

In addition to methodological issues, there was concern about Puerto Rico's unique addressing conventions and the use of Spanish. Most notable is the four line address where the urbanization name (neighborhood equivalent/connotation) is used to eliminate the tie between repeated street names in different urbanizations. In some instances, the urbanization, condominium, or community/district name is used in lieu of a street name.

Puerto Rico's unique addressing norms and systems do not allow the Census Bureau to apply the same business rules for automated processing that are followed stateside. The address landscape across Puerto Rico is a mix of styles and standards. These situations that complicate parsing and standardization do occur stateside, but not to the degree and variety found in Puerto Rico.

In addition to the mix of styles and standards related to Puerto Rico addresses, there were several capture and processing problems. The problems stem from not sufficiently modifying the Census 2000 procedures and instruments **designed for stateside operations** to capture, process, transfer, and store address information. From field listing forms, to questionnaire design, to data entry instruments, to file exchange layouts, to the basic layout of the Master Address File (MAF), the fields and field lengths provided were not always adequate to handle Puerto Rico addresses and in some instances not consistent from one medium to the next.

All three authors acknowledge that some parts of their analysis for Puerto Rico are limited due to an address listing processing error of the keyed listing pages. This error affected the Puerto Rico address list and subsequent operations which used and/or built upon this list. The keyed listing pages had a 60 character address field that could contain a city-style address or a location description. The stateside files used a flag, "A/D," set by the lister to indicate whether it was "A" for a city-style address or "D" for a location description. In Puerto Rico, the address listing pages were in Spanish and the flag set by the lister was "D/L." The "D" was used for city-style addresses and stood for the Spanish word *dirección*. The "L" was used for a physical location description and stood for the Spanish word *localización*. Another difference between the

stateside and Puerto Rico listing pages was the addition of a fourth line for urbanization or condominium name.

When the Decennial Systems and Contracts Management Office (DSCMO) processed the files for Puerto Rico, the “D” flag was processed as a location description, as it was in the U.S., and the Puerto Rico keyed data were run through the stateside standardizer. However, the Census Bureau did not have a standardizer that could accommodate the Spanish, four line addresses from Puerto Rico. As a result, all of the address information collected in Puerto Rico had to be moved to the location description field. The location description field then had a flag indicating whether the address was a city-style or non-city style address. Processing was complicated by the fact that often the 60 character field frequently contained a field listing entry that incorrectly blended both city style and location description together. Any lister error in setting the flags or recording the information in the assigned fields, further complicated this solution. While this solution was less than perfect, it allowed the Census Bureau to use the addresses that had been collected during address listing for subsequent census operations.

F.2 The Address Listing and Operation and Its Impact on the Master Address File

This evaluation provides some tables where information from the U.S. and Puerto Rico are combined, as well as some specific tables for either the U.S. or Puerto Rico.

Since all of Puerto Rico was to be update/leave, the entire Island needed to be listed, about 1.4 million addresses. Of those addresses listed, 99.5 percent were Decennial Master Address File (DMAF) deliverable and over 94 percent were in the final census count.

The processing error described in Section 4.1 affected the results of this analysis, notably the absence of any information on multi-unit and city-style addresses in Puerto Rico. Both items require the use of the city-style address field on the Master Address File (MAF) extract as the starting point and all of Puerto Rico’s addresses were in the location description field. Thus in this analysis, all of Puerto Rico housing units were treated as single units and there were no city-style addresses in Puerto Rico.

F.6 Evaluation of the Local Update of Census Addresses 99 (LUCA 99)

The LUCA 99 program invited local governments to participate in the review of the addresses collected during the address listing operation. In Puerto Rico, 50 of the 78 municipios signed up to participate. This was a higher participation rate, by eligible governmental units, than any of the four regions of the U.S. The Boston Regional Census Center (RCC) considered the Puerto Rico LUCA 99 program a success because the high participation rate indicated an awareness of the importance of Census 2000 to the local governments. About 20 percent of the Puerto Rico participants challenged blocks.

In the U.S., program participants were provided map spotted maps, a census block housing unit summary list, and a list of addresses for their area to be used as a reference. A LUCA 99 material modification was required for Puerto Rico because of map quality concerns. Due to map spot crowding, program participants received block maps with the map spots removed.

Using the materials provided by the Census Bureau, municipios identified any block counts they deemed inaccurate and the Census Bureau recanvassed those blocks. In Puerto Rico 35,563 addresses were sent out for review. Enumerators could verify, delete, declare non-residential, correct or add addresses. In Puerto Rico: 33,029 addresses were verified; 2,513 were deleted; 21 were determined to be non-residential; and zero were corrected. In areas that were recanvassed, enumerators added a total of 9,874 addresses.

The zero corrections requires further explanation. The LUCA 99 field verification listings for Puerto Rico were erroneously run using the stateside listing page format instead of the Puerto Rico format. This error was discovered when the enumerators were in the field with the binders. The stateside listing page did not display the additional line for the urbanization or condominium name and used “A/D” (address/description) rather than the Puerto Rico “D/L” (dirección/localización) for capturing addresses or location descriptions. The complication was that enumerators made corrections to the urbanization/condominium name anywhere on the listing page they found space. The correct Puerto Rico Spanish blank add pages, however, were inserted into the binders.

As a result, all added addresses and existing addresses with action codes of “does not exist” and “nonresidential” could be keyed. Corrections to address listings were not keyed since the corrections made on the stateside address listing pages for items such as urbanization/condominium name could have been placed anywhere on the line or page. The National Processing Center (NPC) did not have a sufficient number of bilingual clerks that could have interpreted these corrections.³

As in Evaluation F.2, this evaluation is limited by the processing error that occurred during address listing with respect to analysis by city-style address or multi-unit status.

F.10 Evaluation of the Update/Leave Operation

All of Puerto Rico was Type of Enumeration Area (TEA) 2 and enumerated using update/leave (U/L). The pre-printed U/L listing page for Puerto Rico was in English and the U/L add page was in Spanish. Both pages carried an additional line for the urbanization or condominium name.

³Hovland, Idabelle B., Memorandum for the Record, *Keying LUCA 99 Field Verification Results for Puerto Rico*, August 24, 1999.

In Puerto Rico, a total of 1,471,225 U/L actions were taken. This consisted of:

adds	111,787
corrections	751,156
deletes	122,815
verifies	485,467

The author notes that Puerto Rico U/L had a higher percentage of adds, deletes and corrections than stateside operations, but acknowledges that the address listing processing error may account for the additional work that was required.

Of the 111,787 added addresses, nearly 90 percent of the adds per block occurred in blocks with fewer than ten adds. The numbers of corrections and deletes per block were more widely distributed, especially corrections. The wide distribution of corrections may be attributable to the initial processing error and that LUCA 99 field verification corrections were not keyed. Of the 111,787 addresses added in the U/L operation, 93,607 (83.7 percent) were in the final count.

As with evaluations F.2 and F.6, this evaluation is limited by the processing error that occurred during address listing with respect to analysis by city-style address or multi-unit status. In addition, the Delivery Sequence File analysis that the author provides for stateside, as an indicator of possible future mail-out/mail-back areas, was not done for Puerto Rico because the addresses were not matchable city-style addresses.

Independent Analysis of Address List Development Activities in Puerto Rico

In 1996, a Puerto Rico 2000 Working Group was formed with representatives from the following divisions: Decennial Management (DMD), Population (POP), Field (FLD), Decennial Statistical Studies (DSSD), and Geography (GEO). (At that time DMD also encompassed the functions of the current Decennial Systems and Contracts Management Office). In retrospect, a critical omission from the team was a representative from the Technologies Management Office since many of the address listings were of the automated variety whose templates could not be modified in time to accommodate Spanish.

The Puerto Rico 2000 Working Group was responsible for the overall planning of census activities. In addition, they provided background support to other divisional teams that were responsible for specific operations (e.g. Group Quarters enumeration) that would take place in Puerto Rico.

The Puerto Rico 2000 Working Group supported the move from the 1990 List/Enumerate methodology to Update/Leave. The 1990 census data showed 71 percent of the population in Puerto Rico as urban. There had even been a 1990 Puerto Rico Multi-unit Coverage Improvement Operation Evaluation that encompassed the four San Juan area District Offices. That evaluation found 262 eligible multi-units with over 34,000 units. Given this information,

the working group even explored the possibility of having a Mailout/Mailback test site in Bayamón but concluded that it would not be feasible without a 1990 census address list that could be used in conjunction with the Puerto Rico United States Postal Service (USPS) Delivery Sequence File that used four-line addresses. While the working group recognized that Update/Leave represented a step forward along the enumeration continuum, it also recognized the drawback of its being a basically rural procedure.

The working group used the stateside address listing page as the base for developing an address listing page for Puerto Rico. Concern over processing issues, kept modifications to a minimum. It was agreed that, at a minimum, the page would have to be in Spanish and a fourth line would be required for urbanization or condominium name. The working group used the Postal Addressing Directory, produced by the USPS Caribbean District, as a guide in developing address collection requirements for Puerto Rico. Research in Puerto Rico revealed that E-911 addresses were not established. The working group agreed to remove that field from the Puerto Rico listing page and allow larger spaces for the existing fields.

The working group discussed processing concerns such as lengths of fields, capturing diacriticals, and the transfer of files between GEO and DMD. There was general agreement that modifications for Puerto Rico would be necessary and modifications were kept to a minimum. The working group was aware of the changes that were made to the address fields in Puerto Rico, and communicated them via memoranda to affected divisions (Puerto Rico 2000 Memoranda Series, NO. 97-01; Memorandum to Distribution List from Idabelle B. Hovland, January 28, 1998). While the memoranda were widely distributed, the information was not communicated to everyone within each division who needed to know. The most glaring result of this lack of communication between all affected parties is evidenced in the initial processing of the address listing.

From that point on, salvaging the address listings from Puerto Rico became the goal for each successive census operation - some of which introduced new problems. These unplanned for operational challenges, plus the use of a basically rural procedure in a predominantly urban environment, complicated enumeration and affected the address list development evaluations. Loading all addresses into the location description field allowed us to proceed with enumeration operations, but could not provide any evaluation statistics based on city style or multi-unit status.

The compromised state of the Puerto Rico Master Address File (MAF) at the end of census operations was the reason the Census Bureau entered into a contract with Seek Data to clean up the Puerto Rico MAF. Seek Data took the Puerto Rico MAF records and standardized and parsed them into individual address components and added components as appropriate. Seek Data is currently working with GEO to develop a new data model for Puerto Rico MAF addresses that will better enable the Census Bureau to implement automated address processing activities for the 2010 census.

The need to improve communication with, and involvement of, all affected parties with interest in the Puerto Rico address list development activities is the basis for our recommendation to improve the process for including and informing all parties when customization is required. Among other things, we suggest an increase in the use of Joint Application Developments and the inclusion of in-house personnel from all relevant subject matter and operational divisions in the planning, specification, development, and testing of materials for Puerto Rico.

4.2 Mail Response and Mail Return Rates

The research questions posed are: *What were the mail response and mail return rates?* and *How did they differ by long and short form?*

In Puerto Rico, the response rate as of April 18, 2000 was 48.4 percent. Stateside, the response rate as of April 18, 2000 was 59.3 percent. The Evaluation H.8 author explains that the *mail response rate* is defined as the number of mail returns received prior to the cut date for the NRFU universe divided by the total number of housing units in mailback areas that were eligible for NRFU. It is a measure that represents the percentage of addresses eligible for NRFU that returned questionnaires prior to the designation of the NRFU universe. In Puerto Rico, for short form questionnaires, the response rate as of April 18, 2000 was 50.5 percent; for long form questionnaires the response rate was 37.6 percent. Stateside, as of April 18, 2000, for short form questionnaires the response rate was 61.9 percent; for long form questionnaires it was 51.9 percent.

In Puerto Rico, the mail return rate as of April 18, 2000 was 55.0 percent. Stateside, the return rate as of April 18, 2000 was 69.6 percent. The Evaluation H.8 author explains that the *mail return rate* is defined as the number of mail returns received prior to the cut date for the NRFU universe divided by the total number of **occupied** housing units in mailback areas that were on the DMAF prior to NRFU. In Puerto Rico, as of April 18, 2000, for short form questionnaires the return rate was 57.2 percent and for long form questionnaires it was 43.7 percent. Stateside, as of April 18, 2000, the return rate for short form questionnaires was 72.3 percent; for long form questionnaires it was 61.9 percent.

Two evaluations in this category address additional ways people in Puerto Rico could answer the census - by responding via the Internet or through the use of a Be Counted questionnaire (A.2.b. Internet Data Collection and A.3 Be Counted Campaign for Census 2000). The third evaluation in this category is devoted solely to the issue of why Puerto Rico households chose not to mail back the questionnaire (A.8 Puerto Rico Focus Groups on Why Households Did Not Mail Back the Census 2000 Questionnaire). Evaluation H.8 Operational Analysis of Enumeration in Puerto Rico, discussed more fully in the field data collection category, is the source for the mail response and mail return rates for Puerto Rico.

A.2.b. Internet Data Collection

This evaluation provides operational summaries on the use of the Internet as a response mode. Puerto Rico is included in the overall data analysis. The author does note that there was insufficient time to create a Spanish-language version of the internet form for Puerto Rico. “Thus, respondents in Puerto Rico and other Spanish speakers could respond on the Internet in English only.”

Only short form mailback households with an ID number from the delivered questionnaire were eligible for the internet response option. Puerto Rico had 1,094,593 potentially eligible households and 107 households chose to respond to the Puerto Rico English short form questionnaire via the Internet. Table P19, *Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over*, from the Census 2000 Summary File 3 detailed tables for Puerto Rico indicate that only 30 percent of the population 18 to 64 years old speak only English or speak English “very well.”

A.3 Be Counted Campaign for Census 2000

A Be Counted campaign was implemented in Puerto Rico for Census 2000 with the same goals as stateside:

- count persons who did not receive a census questionnaire
- count persons who believed they were not included on any other census form
- encourage participation of persons who are traditionally undercounted in the census
- provide a means for persons with no usual residence to be counted

In Puerto Rico, Be Counted forms (BCFs) were available in Spanish and English. In addition, Be Counted display boxes were available with Be Counted messages in Haitian-Creole.

The author includes Puerto Rico in the overall evaluation of the Be Counted campaign. The author reports that 60,000 English BCFs and 360,000 Spanish BCFs were printed for Puerto Rico and are included in the numbers of total English and Spanish BCFs printed. Table T., *Cost and Expenditure Category*, shows that printing the English and Spanish BCFs for Puerto Rico cost \$127,181.

A.8 Puerto Rico Focus Groups on Why Households Did Not Mail Back the Census 2000 Questionnaire

The author draws conclusions for reasons for mail nonresponse in Puerto Rico based on focus groups conducted in nine sites across Puerto Rico with a combined total of 41 participants (28 women and 13 men). The nine sites were: Mayagüez, Ponce, Cayey, Loíza, Bayamón, Humacao, Añasco, Old San Juan and Santurce. Focus group participants were household heads who had

not returned the questionnaire by mail or household heads who had later filled out their questionnaire with the help of an enumerator.

The author divides her reasons for mail non-response into four broad categories:

- Motivational and process-related
- Practical and logistical
- Cultural and political
- Related to questionnaire content and design

Motivational and process-related reasons. A lack of clarity about the purpose of the census is included in this category. The focus group participants remembered the advertising campaign as emphasizing mailing back the questionnaire and how the number of responses was important in determining federal aid. They felt that the advertising campaign did not convey a broad sense of purpose and was reminiscent of a political campaign.

Also included in this broad category was focus group participants' confusion over the distribution of questionnaires and the role of enumerators in Census 2000 versus 1990. Participants may have seen an U/L enumerator updating address lists and dropping off questionnaires, an Accuracy and Coverage Evaluation (A.C.E.) enumerator with A.C.E. questionnaires, and/or a Nonresponse Followup (NRFU) enumerator with an Enumerator Friendly Questionnaire (EFQ).

Practical and logistical. This broad category includes focus group participants reporting a lack of time to complete the questionnaire. An example given was that of a working mother returning home from work and having to balance competing demands on her time - meal preparation, child care, and completing a census questionnaire.

Another example included in this category is the difficulty some focus group participants had, especially in rural areas, in returning their form by mail.

Cultural and political. Some focus group participants voiced their fears about the perceived lack of confidentiality with questionnaire responses and the attendant consequences if the information fell into the wrong hands - e.g. the tax authority, welfare officials. The focus group participants voiced a general mistrust of government and politicians.

Nonresponse focus group participants "in all communities and across all demographic and economic groups expressed a strong, unqualified support for in-person data collection as the means of gathering the necessary information." The 1990 L/E data collection method offered this approach. In L/E, an enumerator came by each household to pick up a completed Advance Census Report or fill out a questionnaire with the respondent and took the completed questionnaire with him/her. Anecdotes which elaborated on the perceived cultural preference for a personal approach were supplied by the A.8 author.

Related to questionnaire content and design. As discussed in Section 2.2, Questionnaire Content, Census 2000 was the first time that stateside questionnaire content was used in Puerto Rico. The Census Bureau used the stateside questionnaire content in Puerto Rico at the request of the Puerto Rico Planning Board, the Census Bureau's officially designated liaison.

As a result of this request, several new topics were introduced (such as race and Hispanic origin) while other topics from previous censuses were dropped. Many nonresponse focus group participants voiced their objections to the use of the race and Hispanic origin questions in Puerto Rico. They viewed the questions as divisive and insensitive to the 'mixed' realities of Puerto Rico.

Various nonresponse focus group participants also voiced objections to questions on income, marital status and household composition. However, these were not new questions for Census 2000 in Puerto Rico.

Finally, nonresponse focus group participants voiced concerns about the overall length and complexity of the long form questionnaire. Some nonresponse focus group participants also felt that the language used on the questionnaire was hard to understand. The A.8 author suggests that in some cases the basic issue was literacy and reported that respondent strategies included waiting for an enumerator or neighbor to help them complete the form correctly.

Independent Analysis of Mail Response and Mail Return Rates

According to Evaluation H.8, Operational Analysis of Enumeration in Puerto Rico, the mail response rate in Puerto Rico as of April 18, 2000 (Nonresponse Followup [NRFU] cut date) was 48.4 percent and the mail return rate was 55.0 percent. Cost model assumptions for the Puerto Rico NRFU operation assumed a 50 percent response rate. We used this rate based on the fact that Puerto Rico households had no prior experience with mailback censuses or surveys. (At that time Puerto Rico was not included in some of the larger U.S. surveys conducted by the Census Bureau, such as the American Community, that require respondents to mail back a questionnaire.) Stateside respondents have been responding by mail since 1970. We would expect the response rate in Puerto Rico to increase in the 2010 Census, given the mailback experience in Census 2000, and a clear media message in 2010 to continue mailing back the questionnaires.

Be Counted forms (BCFs) were another way respondents could answer the census. Past experience has shown that the most used language in Puerto Rico is Spanish, followed by English. Thus the BCFs and display boxes in Puerto Rico were available in both Spanish and English. A June 28, 2000 check-in record of Puerto Rico BCFs shows that there were 13,300 Spanish and 1,069 English BCFs checked in to the Data Capture Center in Jeffersonville, IN.

In an effort to count what was thought to be an emerging Haitian immigrant population, Haitian-Creole Language Assistance Guides were available for Puerto Rico as well as a Be Counted

display box with Haitian-Creole stickers. Results from Census 2000 show that 328 residents claimed Haiti as their place of birth. However, we have no data on the use of the Haitian-Creole language assistance guides in Puerto Rico.

The internet was another response option. In Puerto Rico, this option was available in English to short form mailback household respondents with an ID number from the delivered U/L questionnaire. In Puerto Rico, only 107 respondents chose the Internet as a response option. If the Internet response option is expanded to include Spanish, we would expect that the number of Internet respondents in Puerto Rico to increase for 2010. We base this recommendation on the increase in the number of Internet users and services available to them in Spanish.

A December 2002 study conducted in Puerto Rico by Research & Research in collaboration with Nobox Marketing Group for the Puerto Rico chapter of the Internet Society, points to 970,000 Internet users. This is up from an estimated 551,000 Internet users in 2000.⁴ In addition, several of the most popular Internet Service Providers (ISPs) like AOL and ATT, as well as local ISPs, provide service to the island and have Spanish speaking support.

There are many websites in Spanish, including many of the popular stateside websites such as Yahoo and Amazon, which have mirror pages in Spanish. On island there are many websites, such as the *El Nuevo Día* newspaper, which provide content solely in Spanish. Newer versions of web browsers such as Internet Explorer and Netscape Navigator can be set up in Spanish to view all browser buttons and menus in Spanish.

Some potential respondents chose not to complete a questionnaire. Many of the reasons are familiar - competing demands for time, the questionnaire is too long, the questions are offensive - and are applicable across cultures. As voiced by the focus group participants in Evaluation A.8, there does appear to be at least some cultural preference in Puerto Rico for the more personal approach that List/Enumerate offered and focus group participants were willing to wait for the NRFU enumerator to come around to complete the interview. Whether this would be true for a larger segment of the population is unclear.

4.3 *Completeness and Quality of Data*

The research questions posed are: *How complete are census data for Puerto Rico and What is their quality as measured by item nonresponse and rate of proxy responses?* Two of the three evaluations in this category look at Puerto Rico responses to the Hispanic origin and race questions: B.12 Puerto Rico Census 2000 Responses to the Race and Ethnicity Questions and B.13 Puerto Rico Focus Groups on the Census 2000 Race and Ethnicity Questions. Since the Census Bureau has never asked the Hispanic origin question in Puerto Rico, and race was last collected in the 1950 census, there has been considerable interest in analyzing the results of these questions.

⁴ Caribbean Business, *Internet Users in Puerto Rico Near One Million*, Volume 31, No. 15, April 10, 2003.

One evaluation, B.1.b Analysis of Item Nonresponse Rates for the 100 Percent Housing and Population Items from Census 2000, looks at overall item nonresponse.

Past research, cited by the B.12 and B.13 authors, suggest that respondents of Hispanic origin tend not to differentiate between race and Hispanic origin. This idea is more fully explored with the Evaluation B.13 focus group participants who corroborate the findings from this earlier research. Results from the focus groups evaluation discuss how participants felt that the existing race categories did not match their Puerto Rican identity. Focus group participants discussed whether race was measured by color, features, origin, etc. and that members of the same family could be classified differently, depending on how race was defined.

The B.13 evaluation author reports that past research has also found that Hispanics may feel pressure to use the “White” category even though they do not consider this response accurate nor feel they would be considered “White” in their country of origin. Findings from the response tally and the focus group participants give further credence to this theory.

While Evaluation B.13 indicates there was controversy over the Hispanic origin and race questions in Puerto Rico, Evaluation B.12 demonstrates that Puerto Rico respondents of Hispanic origin seemed to have less trouble with the questions than their stateside counterparts of Hispanic origin, as measured by lower item nonresponse rates.

B.1.b. Analysis of Item Nonresponse Rates for the 100 Percent Housing and Population Items from Census 2000

Item nonresponse occurs when no answer is provided to an item on the questionnaire. Examining item nonresponse provides information about data quality. The item nonresponse evaluation universe is the housing unit population.

While the analysis in this report does not include Puerto Rico, statistics for Puerto Rico are provided in Appendix G. We looked at some of the major stateside findings to see if they held true for Puerto Rico.

In the U.S., item nonresponse for the Census 2000 100 percent items ranged from 1.13 percent for the sex item to 4.14 percent for the tenure item. In Puerto Rico, the overall item nonresponse rate for the Census 2000 100 percent items ranged from 1.01 percent for the Hispanic origin item to 6.15 percent for the tenure item. The low nonresponse rate to the Hispanic origin question is not surprising given that Puerto Rican was a checkbox choice.

In the U.S., item nonresponse was generally higher for enumerator returns than for self-response and higher for long forms than short forms. For both short and long forms, item nonresponse for all questions except Hispanic origin was higher for enumerator returns. The tenure and age items had the largest absolute differences in item nonresponse rates between response modes. The absolute differences were 6.22 and 6.91 percentage points, respectively. In Puerto Rico, item

nonresponse was generally higher for enumerator returns than for self-response and higher for long forms than short forms. For both short and long forms, item nonresponse for all questions except race was higher for enumerator returns. The race and tenure items had the largest absolute differences in item nonresponse rates between response modes. The absolute differences were 3.56 and 3.15 percentage points, respectively.

It is not surprising that the Hispanic origin (stateside) and race (Puerto Rico) swapped places, with regards to the one item where the enumerator nonresponse rate was lower than self response. Puerto Rican was an obvious choice for Puerto Rico, but Puerto Ricans are not accustomed to being asked their race on official Puerto Rico government documents (see subsequent discussions of Evaluations B.12 and B.13). Enumerators were trained on the differences between race and Hispanic origin.

In the U.S., tenure had a relatively higher overall nonresponse rate compared to other items. Specifically, long form tenure nonresponse rates are higher perhaps due to the placement of tenure after all long form items for Person 1. In Puerto Rico, tenure had a relatively higher overall nonresponse rate (6.15 percent) compared to other items. In Puerto Rico, the tenure nonresponse rate for the short form was 5.35 percent and 10.26 percent for the long form tenure. As in the U.S., the placement of the tenure question after all of the Person 1 population characteristics may be the reason for this.

In the U.S., age had differentially higher nonresponse for enumerators; which may be due to the use of proxy in personal interviews. In Puerto Rico, tenure had differentially higher nonresponse for enumerators.

In the U.S., for the Hispanic origin item, nonresponse was higher for self-response. The lowest nonresponse for Hispanic origin is associated with enumerator short forms. It appears that self respondents do not understand the difference between race and Hispanic origin, so they answer the race question and leave Hispanic origin question blank. In Puerto Rico, for the race item, nonresponse was higher for self-response. The lowest nonresponse for race is associated with enumerator short forms. It appears that self respondents in Puerto Rico do not understand the difference between race and Hispanic origin, so they answer the Hispanic origin question and leave the race question blank.

B.12 Puerto Rico Census 2000 Responses to the Race and Ethnicity Questions

Evaluation B.12 for Puerto Rico looks at the Hispanic origin and race responses, item non-response rates for the Hispanic origin and race questions, and any differences in Hispanic origin and race responses by response mode (respondent or enumerator supplied). Many results are compared with those of respondents of Hispanic origin in the 50 states and DC.

Hispanic origin responses. The analysis shows that the residents of Puerto Rico identified themselves as overwhelmingly of Hispanic origin (98.8 percent). About 95.1 percent of the

population identified themselves as of Puerto Rican origin; 1.5 percent as of Dominican origin and less than 1.0 percent as of either Cuban or Mexican origin. Of these groups, only Dominican required a write-in response as there was no check box for Dominican.

Race responses. The analysis shows that more than 95 percent of people who identified themselves as of Hispanic origin in Puerto Rico also identified themselves as of one race. The great majority of those who identified themselves as Hispanic also reported themselves as White alone (80.7 percent), while 7.9 percent identified themselves as Black or African American alone, and just under 7 percent reported themselves as of Some Other Race alone. This differs from stateside Hispanics where only 47.9 percent identify themselves as White alone, 2.0 percent as Black or African American alone, and 42.2 percent identify themselves as Some Other Race alone.

More than 90 percent of the Puerto Rico respondents who identified themselves as of Hispanic origin used the race check boxes, while 9.2 percent provided write-in responses. Of the write-in responses, 82.8 percent were in the space provided to specify the Some Other Race response. Almost two-thirds of these responses provided Hispanic origin identifications and not their race, while slightly less than one-third provided a color response such as “moreno” or “brown.”

Item non-response for Hispanic origin. Item non-response, including invalid response, can be an indicator of how well a question has been received and handled by the respondent. This can be measured by the number of responses that need to be generated by the edit and allocation process during Census processing.

The percent of responses to the Hispanic origin question resulting from the edit and allocation by Hispanic origin was 4.6 percent in Puerto Rico as compared to the stateside rate of 9.2 percent.

Item non-response for race. The author looks at the percent of responses to the race question that were the result of the edit and allocation process, by Hispanic origin, and finds that only 6.2 percent of the Puerto Rico responses by those of Hispanic origin were edited and allocated, while 18.2 percent of the stateside responses were edited and allocated.

Differences between respondent and enumerator completed questionnaires. The author explains that another indicator of how well a question is received and answered by respondents is if there are differences in responses from questionnaires filled out by respondents as compared with enumerator completed questionnaires.

The response to the Hispanic origin question shows very little difference between respondent completed and enumerator completed questionnaires. More variation is shown for the race question. During enumerator conducted interviews, those of Hispanic origin tended to give a White alone or Black or African American alone response less frequently, while giving a Some Other Race alone or Two or More Races response more frequently.

B.13 Puerto Rico Focus Groups on the Census 2000 Race and Ethnicity Questions

The author draws her conclusions from 86 participants at focus group discussions that were conducted in 12 sites across the Island. The 12 sites represented both urban and rural areas (Arecibo, Isabela, Rincón, Mayagüez, Lares, Yauco, Ponce, Cidra, Bayamón, San Juan, Río Grande and Yabucoa).

As a context for the discussion on Hispanic origin and race in Puerto Rico, the author makes two important observations:

- Puerto Ricans are not accustomed to being asked for their race in official Puerto Rico government documents.
- Issues of race, nationality, and identity are politically charged.

Hispanic origin. Since Puerto Rican was one of the check box options, most participants had no difficulty with this question and it was not subject to the same scrutiny as the race question. Some focus group participants did report that the phrase “Spanish/Hispanic/Latino” origin was confusing or more appropriate to a U.S. context.

Race. Having answered the Hispanic origin question, many focus group participants thought the race question, which followed the Hispanic origin question, was redundant. They did not see themselves accurately represented in the race question answer categories and they would have preferred to see the “Puerto Rican” category as a pre-printed category on the race question.

Focus group participants repeatedly observed that the race question was inappropriate to the Puerto Rico context and inherently divisive. This varied surprisingly little by place or social class. The participants pointed out that in school they learn that the Puerto Rican “race” is a distinctive mixture of Spanish, Indian, and African. This, plus the fact that race is not requested on official Puerto Rico government documents, did not give participants a lot of experience defining race using Census Bureau categories. (Although Puerto Ricans who have had experience filling out other forms from the U.S. government may be familiar with race and ethnicity questions.) Participants therefore tended to think of race in terms of nationalities or in terms of color. Participants then reported, however, that the problem with using color or phenotypic characteristics was that family members could be different races. While the focus group participants reported difficulty with the race question, the results of the B.12 evaluation show that only 6.2 percent of the responses to the race question by respondents of Hispanic origin in Puerto Rico required edit and allocation.

The B.12 evaluation also shows that 80.7 percent of the respondents in Puerto Rico who reported Hispanic origin also reported themselves in the White alone category. Focus group participants provide some insights as to why this may be, including: White was the best answer among inappropriate alternatives, Black was only for those who were pure Black, and that there is still a stigma to being identified as Black in Puerto Rico.

Given that the focus group participants did not see the individual pre-printed race categories as applicable to their situation, the question remains as to why they did not check multiple boxes to indicate their mixed heritage. The B.12 evaluation reports that only 4.1 percent of the Hispanic origin respondents in Puerto Rico reported two or more races. The B.13 author observes: “Quite a few of the focus group participants had not realized they could have checked off multiple racial categories for each person in their household.” Other participants, who were aware of the option, thought of the Puerto Rican race as a unitary or continuous concept which would not be captured by checking multiple boxes. Many focus group participants would have preferred a single response option that acknowledged their mixed ancestry and suggested “Creole,” “trigueño,” or “Caribbean.”

Independent Analysis of Completeness and Quality of Data in Puerto Rico

There has been considerable interest within Puerto Rico and the Census Bureau as to how the race and Hispanic origin questions were received by respondents and the resulting data. Race was last collected by enumerators in the 1950 Census of Puerto Rico. Hispanic origin has never been asked in Puerto Rico. These questions were asked in Puerto Rico for Census 2000 as the result of the Government of Puerto Rico’s request for the same questionnaire content as the United States.

Because two of the three evaluations in this category focus exclusively on the race and Hispanic origin questions, we limit our analysis to these questions.

All three evaluations suggest that in Puerto Rico there is more respondent difficulty with the race question than the Hispanic origin question. Intuitively, that seems reasonable since Puerto Rican is a check box response for the Hispanic origin question. As Evaluation B.1.b. demonstrates, the race item was the only item where non-response was higher for self-response than enumerator returns. On the other hand, Evaluation B.12 finds that for respondents of Hispanic origin only 6.2 percent of the Puerto Rico responses to the race question were edited and allocated, while 18.2 percent of the stateside responses to the race question were edited and allocated.

Contextually, as the Evaluation B.13 author points out, Puerto Ricans are not accustomed to being asked for their race in official Puerto Rico government documents and issues of race, nationality, and identity are politically charged. A panel of social scientists and professors convened by the San Juan City Magazine in 1995 to analyze the variations on racism in Puerto Rico, would agree with that assertion. The director of the Institute of Caribbean Studies at the University of Puerto Rico, Aaron Gamaliel Ramos, observed: “To talk about race and racism is to agitate the still waters of national solidarity.” This view coincides with that observed by the Evaluation B.13 author that focus group participants saw “Puerto Rican” as a unitary or continuous concept that cannot be captured by checking multiple race categories.

In addition to interest in why the questions on race and Hispanic origin were being asked in Puerto Rico, considerable interest was generated in the resulting data. Census results showed

that the great majority of those who identified themselves as Hispanic in Puerto Rico also reported themselves as White alone (80.7 percent), while 7.9 percent identified themselves as Black or African American alone, and just under 7 percent reported themselves as of Some Other Race alone. A headline in the newspaper *El Nuevo Día*, dated April 16, 2001, read “*Rechazo boricua a su origen negro*” (Puerto Ricans reject their black origins). Persons interviewed for the article indicated that these Census results do not reflect the racial reality of Puerto Rico.

Although the race question and resulting data caused controversy within Puerto Rico, two facts remain:

- Race and Hispanic origin appeared on the questionnaire as a direct result of the request from the Government of Puerto Rico for the same questionnaire content as stateside; and
- Puerto Rico respondents of Hispanic origin seemed to have less trouble with the questions than their stateside counterparts of Hispanic origin, as measured by lower item nonresponse rates.

4.4 *Field Data Collection*

The research question posed is: *How well did we perform the field data collection activities?* Topics reviewed were field verification for Non-ID housing units, nonresponse followup (NRFU), an operational analysis of Puerto Rico enumeration, a statistical profile of Local Census Offices, and the date of reference used by respondents when reporting age and date of birth.

Three of the field data collection evaluations (field verification, NRFU, and date of reference) present Puerto Rico data in combination with U.S. data. Two of these three evaluations (field verification and date of reference) each provide one table with Puerto Rico specific information. The third evaluation (NRFU) provides six tables with Puerto Rico specific data.

Evaluation H.9, Local Census Office Profile for Census 2000, provides hundreds of Puerto Rico specific tables. Evaluation H.8, Operational Analysis of Enumeration of Puerto Rico, primarily focuses on the update/leave (U/L) operation.

H.2 *Assessment of Field Verification*

This evaluation focuses on the Be Counted/Telephone Questionnaire Assistance Field Verification operation. During this operation, enumerators visited the location of units without an assigned Census identification number to verify their existence before they were included in Census 2000. Puerto Rico is included in the overall analysis, with one table providing Puerto Rico specific data. The table shows that there were 690 assignment areas (AAs) in Puerto Rico with field verification cases. (For Census 2000, Puerto Rico had 6,225 AAs.) These 690 AAs represent 0.16 percent of the total number of AAs within the U.S. and Puerto Rico that had field verification cases.

H.5 Nonresponse Followup for Census 2000

The objective of the NRFU operation was to obtain a completed questionnaire from all households in mailback areas that did not respond by mail, through the Internet or via a Telephone Questionnaire Assistance operator. Since all of Puerto Rico was enumerated by L/E in 1990, NRFU was a new operation for Puerto Rico in Census 2000. From the point of view of the Boston Regional Census Center (RCC), NRFU in Puerto Rico was very successful and all NRFU operations at the Local Census Offices (LCOs) were finished ahead of schedule.

In this evaluation, Puerto Rico statistics are combined with those of the U.S. Puerto Rico specific data, however, are available from six tables in the appendices which provide state level data. The data in the appendices show that while Puerto Rico had 1,357,301 housing units potentially eligible for followup, the NRFU workload universe in Puerto Rico was 699,540 housing units.

The following NRFU operational challenges in U/L areas, noted by the author, also occurred in Puerto Rico: surname in the incorrect field on the listing page, address registers started with the address of the first nonresponding housing unit on each block, and U/L adds were not processed in time to update the NRFU registers. Because the U/L adds were not keyed in time, enumerators may have added the missing units again during the NRFU operation and thus inflated the percentage of added addresses. In Puerto Rico, NRFU was responsible for adding 28,793 addresses and deleting 78,680 addresses.

H.8 Operational Analysis of Enumeration of Puerto Rico

The author looks at the way the address list was compiled, characteristics of the U/L operation and operational problems which occurred in the NRFU and Coverage Improvement Followup (CIFU) operations. An analysis of the debriefing questionnaires completed by the Assistant Manager for Field Operations (AMFO) found three main problem areas: late arrival of training materials, maps, and merging long-form and short-form questionnaires in the Local Census Offices (LCOs).

Training materials for Puerto Rico field operations were adapted for addressing conventions and geographic and questionnaire differences. In addition, all materials for enumerators, crew leaders and field operations supervisors were to be translated into Spanish. While materials for Puerto Rico were adapted and translated on a flow basis, they could not be finalized until the stateside materials were completed. This meant that Puerto Rico materials were always available after stateside materials were available. Occasionally, there was not enough time in the schedule to allow for the translation of field operations supervisor materials. Any problems with assembling and shipping materials exacerbated an already tight schedule.

The AMFOs felt that numerous map updates were required, especially in rural areas. While U/L is primarily a rural procedure in the U.S., in Puerto Rico it was used islandwide. Because of

scale issues, map spotting in urban areas was difficult. Furthermore, the process of passing on map updates to subsequent field operations was considered problematic.

The LCOs prepared the U/L enumerator assignments. One of the difficult tasks, reported in the AMFO debriefing questionnaires, was merging the long form and short form questionnaires so that they appeared in the order found on the U/L listing pages.

There were 1,471,225 addresses in Puerto Rico, including addresses from the address listing operation and adds from the U/L operation. U/L adds accounted for 7.6 percent of the Puerto Rico workload. Of the 111,787 U/L adds in Puerto Rico, 83.7 percent (93,607) were included in the final counts.

Deletes accounted for almost 8.4 percent of the Puerto Rico U/L workload (as compared to 5.2 percent of the stateside workload). Some of Puerto Rico's higher delete rate may have been due to a change in Puerto Rico's address listing procedures which allowed for the inclusion of vacant damaged living quarters in the address listing registers. This change was made to take into account the effects of Hurricane Georges, which occurred in late September 1998, just before address listing was to begin. At that time it was estimated that Hurricane Georges had damaged or demolished over 100,000 housing units in Puerto Rico. Address listing procedures were modified in anticipation that many of these damaged units would be repaired or reconstructed on the same site in upcoming months.⁵

Corrections accounted for 38.45 percent of the stateside U/L workload and 51.06 percent of the Puerto Rico workload. Puerto Rico's higher correction rate is not surprising given the address listing processing error and the decision not to key LUCA field verification corrections.

The AMFOs reported that the NRFU workload for Puerto Rico was larger than it needed to be. Not all of the Puerto Rico questionnaires sent in were processed before the NRFU cut date. The maps also were cited by the AMFOs as NRFU and CIFU problems. There were problems with crowded map spots and U/L map updates not being passed on to the NRFU and CIFU operations. The AMFOs did report success in retaining qualified staff from earlier operations to work on NRFU and CIFU.

H.9 Local Census Office Profile for Census 2000

This profile covers 16 general topics, including counts by housing unit types, householder demographics, response rates and workloads for various field operations. In all, there are over 1400 statistics produced for each of the LCOs in the U.S. and Puerto Rico. When showing the totals for the various statistics, the tables give the U.S. totals with and without Puerto Rico.

⁵ Monaghan, Brian, Memorandum for Arthur Dukakis, *Inclusion of Vacant Damaged Living Quarters in Address Listing Registers for Puerto Rico*, October 16, 1998.

H.10 Date of Reference for Age and Birth Date used by Respondents of Census 2000

This evaluation analyzes how well respondents used Census Day as their date of reference when answering the age and date of birth questions. For Census 2000, the ‘average’ date of reference was April 20, 2000.

Appendix D, *State Return Rates as of December 31, 2000 and State Date of Reference*, shows that Puerto Rico’s date of reference was May 3, 2000 and its return rate as of December 31, 2000 was 63.9 percent. The author explains that a state’s return rate seems to be correlated with the date of reference for that state. As the rate increases, the date of reference for the state is closer to April 1, 2000. Since Puerto Rico’s return rate was less than that of any U.S. state, it is not surprising that it is the only state (equivalent) with a reference date in May.

Independent Analysis of Field Data Collection Activities

The state of the address list and mail response rate for Puerto Rico are the two overarching issues affecting the evaluations in this category. Field Verification (FV), Update/Leave (U/L) and Nonresponse Followup (NRFU) were the operations most affected by the different addressing conventions used in Puerto Rico and/or the condition of the address list at their respective stages. Puerto Rico’s lower return rate appears to be associated with a May date of reference for respondents (Evaluation H.10) and affected NRFU workloads.

The workload for Puerto Rico for non-MAF ID processing was 40,330 addresses. The FV workload consisted of those non-MAF ID questionnaires that could not be matched to the existing address lists. Because the existing GEO matching and geocoding software could not process the unique addressing conventions found in Puerto Rico, GEO entered into a contract with Seek Data to match and geocode non-MAF ID questionnaires from Puerto Rico. This operation marked the beginning of an ongoing relationship with Seek Data to clean up and standardize address components for the Puerto Rico MAF.

The U/L and NRFU operations in Puerto Rico followed the stateside schedule and the same basic enumeration procedures. Thus stateside successes and challenges also affected Puerto Rico. The inclusion of Puerto Rico in the automated Cost and Progress reports, as well as the LCO statistics reported in Evaluation H.9, are examples of successes. Stateside operational challenges affecting Puerto Rico are evident in some of the same NRFU listing page errors.

Unique to Puerto Rico was the use of a basically rural procedure to enumerate the entire Island. In 1990, Puerto Rico included four Metropolitan Statistical Areas and one Consolidated Metropolitan Statistical Area. Using a rural procedure in this environment creates its own set of problems - most notably map spotting.

The state of the Puerto Rico MAF, after all census data collection operations were completed, is the reason DMD has funded GEO’s contract with Seek Data to clean up the existing MAF. Seek

Data is currently working with GEO to develop a new data model for Puerto Rico MAF addresses that will better enable the Census Bureau to implement automated address processing activities. This will allow us to explore additional enumeration methodologies for Puerto Rico for the 2010 census and better support Puerto Rico Community Survey activities.

4.5 Special Places/Group Quarters

The Special Place/Group Quarters evaluation that provides Puerto Rico specific data is E.5 Group Quarters Enumeration. One table in the appendices provides data using a state-by-state breakout. The Appendix C table provides counts of the GQ population by GQ category. Puerto Rico had a total of 46,774 persons in GQs, distributed as follows: 17,283 in correctional institutions; 853 in juvenile institutions; 7,311 in nursing homes; 3,356 in hospitals; 2174 in colleges/universities; 1,199 in military facilities; 6,419 in group homes; and 8,179 in service-based and other GQs.

Independent Analysis of Special Places/Group Quarters Enumeration

The E.5 evaluation provides Puerto Rico specific data on the population associated with each type of group quarters. However, Puerto Rico also participated in the following operations: Special Place LUCA, Special Place Advance Visits, Military, Maritime, T-Night, Mobile Food Vans, Service Based Enumeration, Shelter, Soup Kitchen and Targeted Non-Sheltered Outdoor Locations. Operationally these operations followed the stateside procedures and schedules, thus conclusions drawn from stateside evaluations can probably be applied to Puerto Rico as well. (Refer to the *Special Place/Group Quarters Enumeration Topic Report* by Florence H. Abramson, issued September 17, 2003.)

In Puerto Rico, the long and short form Individual Census Reports (ICRs) and Individual Census Questionnaires (ICQs) were available in both Spanish and English. Between ICRs and ICQs, there were eight forms for Puerto Rico. In addition there were Puerto Rico Military Census Reports (MCRs) and Shipboard Census Reports (SCRs) available only in English. In Puerto Rico, the Facility Questionnaire was only available in Spanish and was a paper version as there was not enough time to translate the paper version into a computer assisted telephone interview (CATI) instrument.

Numerous forms and the late arrival of training materials were the issues that most affected Puerto Rico Special Place/Group Quarters enumeration. There was insufficient lead time to adapt and translate all of the Special Place/Group Quarters training materials. Various imperfect solutions were tried, including using stateside materials or only adapted materials. Sometimes, when there was not enough time to translate the materials, the positions were filled with bilingual personnel in order to meet the enumeration schedule.

5. Evaluation Authors' Recommendations

The following list of recommendations represents a summary of those provided by the authors of the evaluations. The specific study(ies) and/or assessment is provided in parentheses.

- *Include Puerto Rico in any cognitive testing or efforts to field test different versions of the race question.*

The findings from the race question suggest that the residents of Puerto Rico interpreted this question differently than those of Hispanic origin and even those of Puerto Rican origin in the 50 states and DC. Consequently, it will be important to include Puerto Rico in future census tests. (B.12, B.13)

- *Investigate further the use of the Some Other Race Category.*

Investigate further the use of the Some Other Race category of the race question to assure that the range of responses excludes those that better fit the Hispanic origin question. (B.12)

The Census Bureau also is conducting research on eliminating the Some Other Race category from the race question.

- *Improve the census message.*

Provide more extensive public education to the Puerto Rican population on the larger mission of the census, the rationale for asking questions about race and ethnicity, and the intended uses of the data. (B.13)

Develop advertising appeals for census participation more attuned to the Puerto Rican population. (A.8)

- *Conduct a survey on respondents' views on data collection, census materials, and questions.*

Consider using the results of the B.13 study, along with the results of the A.8 study, to create a survey to be administered to a probability sample of residents on the Island. The survey could seek the respondents' views of different approaches to data collection and their reactions to any new materials developed, including any allowable changes made to the structure and content of the questions on race and Hispanic origin. (A.8, B.13)

- *Promote the use of the Internet form.*

While not specific to Puerto Rico, consider how to promulgate the Internet form as an option and convince the public that there is sufficient data security. (A.2.b) For Puerto Rico, provide a Spanish Internet response option in 2010 to respond to the increasing numbers of Internet users on the island.

- *Create a new Puerto Rico address list*
At the point of questionnaire delivery, the initial errors in the address list for Puerto Rico have been compounded from the effects of several operations. It might be advisable for future efforts in Puerto Rico to create a new address list rather than do a dependent listing starting from the current listing. (F.10)
- *Consider mailout/mailback for 2010*
Build on the experience from Census 2000 and the Puerto Rico Community Survey and consider mailout/mailback data collection in 2010 for at least the urban parts of the island. (H.8)
- *Improve census maps and provide more map training*
Include reference points and change the scale of maps to make them easier for enumerators to use. Provide more extensive map training for enumerators and look into the feasibility of using Global Positioning System technology to improve the accuracy of enumerator map spotting. Attempt to automate changes and corrections to census maps from early census field operations so that they can be utilized in subsequent field operations. (H.8)
- *Ensure that field materials arrive on time*
Build enough time into the stateside schedule for field materials preparation so that training materials for Puerto Rico can be adapted and translated and arrive in the LCOs with enough lead time for trainer preparation. (H.8)

6. Topic Report Authors' Recommendations

The “standardize/customize” conflict affected decennial operations for Puerto Rico. Standardization offers cost savings, ease of processing, quicker release of data products, and comparability with stateside data. Customization allows us to prepare materials in Spanish, offer questionnaire content that can meet the Island’s unique data needs, and utilize different addressing requirements and geography. Puerto Rico customization requirements, however, compete for limited decennial resources, including staff, time and money.

Census 2000 was the first time that the Census Bureau and Puerto Rico really experienced the benefits of standardization. Benefits included timely release of data products within the existing stateside schedule, the inclusion of Puerto Rico in U.S. summary statistics, and American Fact Finder availability. While some evaluations suggest the use of the stateside questionnaire in Puerto Rico had its drawbacks, the use of the same questionnaire content simplified the processing and tabulation of data. These benefits were available to the Census Bureau and Puerto Rico because the Government of Puerto Rico requested the same questionnaire content. However, we cannot assume that Puerto Rico will request stateside questionnaire content in 2010.

Some customization for Puerto Rico, beyond the scope of questionnaire content, will always be required. The use of Spanish is the most obvious. In addition to questionnaires and publicity for the general population in Puerto Rico, materials for a predominantly Spanish speaking labor force also must be available.

Several evaluations addressed the problems that resulted from customizing addresses for Puerto Rico to include condominium or urbanization name, and using the Spanish initials for address or location description. This customization was needed to ensure deliverability in Puerto Rico, both by Census 2000 enumerators and for future use by the USPS for mail delivery of the Puerto Rico Community Survey. As the evaluations suggest, the Census Bureau’s standard systems and processes were not sufficiently prepared to handle these customization requirements.

The long term solution for 2010 may be to consider a total redesign of the listing page to allow the Census Bureau to successfully parse Puerto Rico addresses into their component parts (e.g., urbanization, house number, direction, street name, street type). Parsing will allow us to develop the intelligence/capability, over time, to build the various supplemental tables needed for Puerto Rico standardization - like alternative name tables.

Given the “standardize/customize” challenges, we recommend:

Improve the process for including and informing all parties when customization is required

- Increase the use of Joint Applications Development.
- Include in-house personnel from all relevant subject matter and operational divisions in the planning, specification, development, and testing of materials for Puerto Rico.
- Ensure that all team members, such as subject matter experts and processing staffs, stay actively involved in the continued adaptation of requirements and the resolution of technical issues throughout the development and implementation efforts.
- Schedule development activities so that ample time is allowed for the adaptation and translation of materials for Puerto Rico.

Standardize where appropriate

- Standardize the process for ensuring that Puerto Rico customization requirements are included in all processes and systems.
- Standardize processes, such as enumeration methodology, when the Census Bureau determines they can be applied to Puerto Rico without a resulting loss in data quality.
- Collect Puerto Rico addresses using a parsed format developed specifically for Puerto Rico.
- Develop a Puerto Rico address standardizer.

Support early planning

- Explore ways to improve the mailback response rate for Puerto Rico.
- Redesign the Puerto Rico address listing page. Conduct a limited address collection field test in Puerto Rico and of the address listing processing systems prior to 2010 decennial census implementation.
- Dedicate more Census Bureau staff resources to Puerto Rico enumeration issues, so that internal expertise can be developed across divisions.

Develop Puerto Rico specific evaluations

- Build Puerto Rico specific data requirements and analysis into the program design of future census evaluations.

7. Actions to Date

Positive first steps have been taken following Census 2000 towards improving the Puerto Rico Master Address File (MAF). The Geography Division (GEO) has had a contract since 2000 with Seek Data, Inc., a private sector company experienced in working with Puerto Rico addresses and geography. Seek Data is currently altering many existing MAF records by parsing and standardizing the individual address components, or by adding these components to some MAF records where no address components exist. Seek Data also is working with GEO to develop a new data model for Puerto Rico MAF addresses that will better enable the Census Bureau to implement automated address processing activities in the future. This is key to the Census Bureau's ability to maintain the Puerto Rico MAF through automated means.

Seek Data also has begun attempting to provide new, city-style Puerto Rico addresses to the Census Bureau for potential use in future MAF activities. As part of this, they are examining the utility of the United States Postal Service file of addresses, which is a key component of MAF maintenance stateside. This process has only recently begun, and it is too early to predict what results will be achieved.⁶

⁶ Sobel, Joel, E-mail communication to Mr. G. Maldonado, September 25, 2002.

8. Summary

The decision to move from list/enumerate to update/leave for Census 2000 in Puerto Rico represented the first step, in a series of steps that still need to be made, of moving Puerto Rico to mailout/mailback in future censuses. Beginning with address listing, and continuing with subsequent census operations, an address list was built for Puerto Rico. The Puerto Rico address list required customization for deliverability, including Spanish and a fourth line for development or condominium name. As the evaluations indicate, however, the address list was flawed from the beginning and its effects on census operations and data were noted. The GEO is now working with Seek Data to repair and enhance this list for future census operations and the Puerto Rico Community Survey (known as the American Community Survey in the U.S.).

The standardization of questionnaire content has resulted in the timely release of Puerto Rico data products and comparability between stateside and Puerto Rico data. However, as the author of the focus group evaluations points out, standardization often comes with a price - as evidenced by the focus group respondents' complaints with the Hispanic origin and race questions.

The standardization/customization debate for Puerto Rico will continue, with choices to be made for enumeration methodologies, content, geography, data products and so on. Standardizing the process for including customization requirements will help us at every stage along the way.

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References

American FactFinder, Summary File 3 Detailed Tables for Puerto Rico, P19., *Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over*.

Berkowitz, Dr. Susan, *Puerto Rico Focus Groups on Why Households Did Not Mail Back the Census 2000 Questionnaires*, Census 2000 Evaluation A.8, July 2001.

Berkowitz, Dr. Susan, *Puerto Rico Focus Groups on the Census 2000 Race and Ethnicity Questions*, Census 2000 Evaluation B.13, July 2001.

Bryant, Bettie J., Puerto Rico 2000 Memoranda Series, Memorandum No. 97-01, Memorandum to Distribution List, *Transmission of Address Listing Requirements Overview for Puerto Rico*, September 10, 1997.

Burgos, Norma, Chairwoman of the Puerto Rico Planning Board, letter to Dr. Martha Farnsworth Riche, Director, Bureau of the Census, October 31, 1997.

Carter, Nathan, *Be Counted Campaign for Census 2000*, Census 2000 Evaluation A.3, September 2002.

Carter, Nathan and Sarah Brady, *Date of Reference for Age and Birth Date used by Respondents of Census 2000*, Census 2000 Evaluation H.10, November 2002.

Censo de Población y Viviendas: 1950, Puerto Rico, Forma P93.

Christenson, Matthew, Ph.D, *Puerto Rico Census 2000 Responses to the Race and Ethnicity Questions*, Census 2000 Evaluation B.12, July 2003.

El Nuevo Día Interactivo, *Rechazo boricua a su origen negro*, 16 de abril de 2001.

Farnsworth Riche, Dr. Martha, Director, Bureau of the Census, letter to Planner Norma Burgos, Chairwoman of the Puerto Rico Planning Board, January 13, 1998.

Hovland, Idabelle B., Memorandum for the Record, *Keying LUCA 99 Field Verification Results for Puerto Rico*, August 24, 1999.

Hovland, Idabelle B., Note to Distribution List, *Puerto Rico Address Listing Page - Final*, January 28, 1998.

Imel, Jerry D., *Local Census Office Profile for Census 2000*, Final Draft Report, Census 2000 Evaluation H.9, September 2003.

Jonas, Kimball, *Group Quarters Enumeration*, Census 2000 Evaluation E.5, Revision 1, August 2003.

McNally, Tracy, *Operational Analysis of Enumeration of Puerto Rico*, Census 2000 Evaluation H.8, May 2003.

Merced, Hector X., E-mail communication to Carl C. Sanders, March 30, 1999.

Monaghan, Brian, Memorandum for Arthur Dukakis, *Inclusion of Vacant Damaged Living Quarters in Address Listing Registers for Puerto Rico*, October 16, 1998.

Moul, Darlene A., *Nonresponse Followup for Census 2000*, Census 2000 Evaluation H.5, July 2002.

Norris, Sherri, *Analysis of Item Nonresponse Rates for the 100 Percent Housing and Population Items from Census 2000*, Census 2000 Evaluation B.1.b., September 2003.

Owens, Karen L., *Evaluation of the Local Update of Census Addresses 99 (LUCA 99)*, Census 2000 Evaluation F.6, May 2002.

Pennington, Robin A., *Evaluation of the Update/Leave Operation*, Census 2000 Evaluation F.10, June 2003.

Puerto Rico and Island Areas Branch, Internal branch records, *Puerto Rico Mail Back and Internet Forms Check In*, May 18, 2000.

Ruhnke, Megan C., *The Address Listing Operation and Its Impact on the Master Address File*, Census 2000 Evaluation F.2, January 2002.

San Juan City Magazine, *So Are We Racists????? A Conspiracy of Silence: Racism in Puerto Rico*, Dec/Jan 1996.

Sobel, Joel, Memorandum for Lourdes Flaim, *Address Listing Operations for Puerto Rico*, October 25, 1996.

Sobel, Joel, E-mail communication to Idabelle B. Hovland, May 27, 1999.

Sobel, Joel, E-mail communication to Mr. G. Maldonado, September 25, 2002.

Tenebaum, Michael, *Assessment of Field Verification*, Census 2000 Evaluation H.2, July 2001.

Thompson, John H., 2000 Decennial Census, Decision Memorandum No. 6, *Recommendation that the Census Bureau Use the Update/Leave Methodology for Data Collection During the Year 2000 Census of Puerto Rico*, signed by Robert W. Marx on August 12, 1996.

U.S. Census Bureau, Census 2000 Final Response Rates, Final Update, September 7, 2000.

U.S. Census Bureau, 1990 Census of Population and Housing, History, Part D, Chapter 13, *Puerto Rico, Virgin Islands, and the Pacific Island Territories*, March 1996.

Whitworth, Erin, *Internet Data Collection*, Census 2000 Evaluation A.2.b., August 2002.